

What is claimed is:

1. A method of manufacturing a lightweight airfoil having a frame and a skin over the frame, comprising the steps of:
 coring a sheet of support material;
 attaching a skin material to the cored sheet of support material to form a laminate sheet of skin material and support material; and
 defining an outer portion of the airfoil from the laminate sheet.
2. The method according to claim 1, wherein the airfoil defining step includes trimming excess material from the laminate sheet proximate an outer portion of the frame.
3. The method according to claim 1, further comprising a step of defining the frame in the support material.
4. The method according to claim 3, wherein the frame defining step includes compressing the support material proximate the defined frame.
5. The method according to claim 4, wherein the compressing of the support material forms channels on only a first major side of the support material, and
 the skin material is attached to the second major side of the support material.
6. The method according to claim 3, wherein the frame defining step precedes the coring step.
7. The method according to claim 1, wherein the coring step defines an inside portion of the frame.
8. The method according to claim 7, wherein the skin material is attached to the frame using an adhesive glue.

9. The method according to claim 8, further comprising the step of applying the adhesive to the cored sheet of support material prior to the attaching step.

10. The method according to claim 1, wherein the skin material includes biaxial oriented polypropylene.

11. The method according to claim 1, wherein the support material includes expanded polystyrene sheet.

12. The method according to claim 1, wherein a single sheet of support material extends from said coring step to said airfoil defining step.

13. The method according to claim 1, wherein the airfoil has a thickness of about 2.0 mm to about 8.0 mm.

14. The method according to claim 13, wherein the airfoil has an area to weight ratio of 30 in²/gram or more.

15. The method according to claim 1, wherein the airfoil has an area to weight ratio of 30 in²/gram or more.

16. The method according to claim 1, wherein the skin material is rolled onto the support material to form the laminate sheet.

17. The method according to claim 1, wherein the airfoil defining step separates the airfoil from the laminate sheet.

18. The method according to claim 1, wherein a ratio of an area of the frame to an area defined by the frame is less than 0.10.

19. The method according to claim 1, wherein a ratio of an area of the frame to an area defined by the frame is less than 0.05.

20. A method of manufacturing a lightweight airfoil having a frame and a skin over the frame, comprising the steps of:

defining the frame by compressing the support material proximate the frame;

coring a sheet of support material;

applying an adhesive to at least one of the skin material and the support material;

attaching a skin material to the cored sheet of support material using the adhesive to form a laminate sheet of skin material and support material; and

defining an outer portion of the airfoil from the laminate sheet, wherein a single sheet of support material extends from said coring step to said airfoil defining step.

21. A lightweight airfoil, comprising

a frame; and

a skin attached to the frame, wherein the airfoil has an area to weight ratio of 30 in²/gram or more.

22. The lightweight airfoil according to claim 21, wherein the frame is formed from a single sheet of expanded polystyrene.

23. The lightweight airfoil according to claim 22, wherein the skin includes biaxial oriented polypropylene.

24. The lightweight airfoil according to claim 21, wherein the frame has a thickness of about 2.0 mm to about 8.0 mm.

25. The lightweight airfoil according to claim 21, wherein the frame is attached to the skin with an adhesive glue.

26. The lightweight airfoil according to claim 21, wherein the frame is cored.

27. The lightweight airfoil according to claim 21, wherein the airfoil has an area to weight ratio of 30 in²/gram or more.

28. The lightweight airfoil according to claim 21, wherein a ratio of an area of the frame to an area defined by the frame is less than 0.10.

29. The lightweight airfoil according to claim 21, wherein a ratio of an area of the frame to an area defined by the frame is less than 0.05.

30. A lightweight airfoil, comprising
a cored frame; and
a skin attached to the frame with an adhesive, wherein the frame is formed from a single sheet of expanded polystyrene.

31. The lightweight airfoil according to claim 30, wherein the airfoil has an area to weight ratio of 20 in²/gram or more.

32. The lightweight airfoil according to claim 30, wherein the airfoil has an area to weight ratio of 30 in²/gram or more.

33. The lightweight airfoil according to claim 30, wherein a ratio of an area of the frame to an area defined by the frame is less than 0.10.

34. The lightweight airfoil according to claim 30, wherein a ratio of an area of the frame to an area defined by the frame is less than 0.05.

35. The lightweight airfoil according to claim 30, wherein the frame has a thickness of about 2.0 to about 8.0.